



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/602,436

06/23/2003

Jong-Jan Lee

SLA 0733

9661

55286

7590

11/30/2005

SHARP LABORATORIES OF AMERICA, INC.
C/O LAW OFFICE OF GERALD MALISZEWSKI
P.O. BOX 270829
SAN DIEGO, CA 92198-2829

EXAMINER

VU, HUNG K

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 11/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No.	Applicant(s)	
	10/602,436	LEE ET AL.	
	Examiner	Art Unit	
	Hung Vu	2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12, 15-21, 24, 26-30, 38-40 and 42 is/are pending in the application.
- 4a) Of the above claim(s) 1-11 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12, 15-21, 24, 26-30 and 42 is/are allowed.
- 6) ☒ Claim(s) 38-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 16-21, 24, 26-30, 39 and 40 objected to because of the following informalities: In claims 16-21, 24, 26-30, 39 and 40, line 1, "A method" should be changed to "The method" for clarity. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 38 and 40 are rejected under 35 U.S.C. 102(e) as being anticipated by Lin et al.
(PN 6,800,910, of record).

Lin et al. discloses, as shown in Figures 3-7, a method of fabricating a strained silicon

FINFET device, comprising the steps of:

providing a silicon on insulator (SOI) substrate (Col. 4, lines 26 - 27), the silicon on insulator substrate comprising a relaxed silicon germanium layer on an insulator layer;

depositing an epitaxial silicon channel layer (Col. 4, lines 43 - 44) directly onto the seed fin structure (48), wherein the epitaxial silicon channel layer becomes a tensile strained silicon channel layer due to lattice mismatch between channel layer and seed fin structure (Col. 3, lines 44 - 60);

Art Unit: 2811

patterning the multilayer of epitaxial silicon channel layer and silicon germanium layer into a source region and a drain region (82) (Figure 7) sandwiching a seed channel region (82), the seed channel being a seed fin structure (48) (Figure 4c);

forming a gate dielectric layer (Col. 4, lines 55 - 57) on the epitaxial strained silicon channel;

forming a gate (48) (Figure 4c) over the epitaxial strained silicon channel (Col. 4, lines 64 - 65).

Regarding claim 40, Lin et al. disclose a method further comprising:

depositing a hardmask layer (44) onto the relaxed silicon germanium layer (Col. 4, lines 34 - 38);

wherein the deposited hardmask layer is also patterned together with the silicon germanium layer (Col. 4, lines 39 - 42).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. (PN 6,800,910, of record) in view of Murakami et al. (PN 5,241,197, of record).

Art Unit: 2811

Lin et al. discloses the claimed invention including the method of fabricating a strained silicon finFET device. Lin et al. does not disclose that the deposited epitaxial silicon channel layer comprises a germanium component to form a silicon germanium layer on the substrate, the germanium concentration of the silicon germanium layer being less than that of the subsequently deposited silicon germanium layer. Murakami et al. disclose an FET transistor structure (Figure 8) with multiple layers, wherein the films 85 and 22 are Ge films (100% concentration) formed onto a SiGe film (311) where the Ge concentration is 50%, such that the Ge concentration of the silicon germanium layer on insulator is less than the subsequently deposited silicon germanium layer. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Murakami et al. with Lin et al. to obtain a device with improved mobility values.

Allowable Subject Matter

4. Claims 12, 15-21, 24, 26-30 and 42 are allowed.

Response to Arguments

5. Applicant's arguments filed 09/09/05 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the fabrication sequence comprises the deposition of the channel layer 31 on top of the seed layer 30, and then the multilayer of channel 31 and seed 30 is patterned) are not recited in the rejected claim(s).

Art Unit: 2811

Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Vu whose telephone number is (571) 272-1666. The examiner can normally be reached on Tuesday to Friday 6:00-4:30.

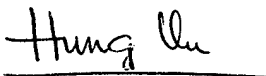
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on (571) 272 - 1732. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2811

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Vu

November 17, 2005

A handwritten signature in black ink, appearing to read "Hung Vu", is written over a horizontal line.

Hung Vu

Primary Examiner